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GRADUATE MANAGEMENT PROJECT

A VA COMMUNITY BASED OUTPATIENT CLINIC: NEEDS ASSESSMENT AND LOCATION DETERMINATION

SUBMITTED TO MAJ MARK PERRY, Ph.D., CHE

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BY

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For the past four years, the Veterans Health Administration (VHA), under the leadership of Undersecretary for Health, Kenneth W. Kizer, M.D., M.P.H., has been undergoing a dramatic and comprehensive process to realign its health care delivery system from a traditional acute care hospital system to an integrated delivery system that employs principles of managed care. One of the most important components of VHA's realignment is the initiative to implement a nationwide system of community based outpatient clinics (CBOC's) for the express purpose of improving the access to primary health care for America's veterans.

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ABSTRACT

For the past four years the Veterans Health Administration (VHA), under the leadership of Undersecretary for Health, Kenneth W. Kizer, M.D., M.P.H., has been undergoing a dramatic and comprehensive process to realign its health care delivery system from a traditional acute care hospital system to an integrated delivery system that employs principles of managed care. One of the most important components of VHA's realignment is the initiative to implement a nationwide system of community based outpatient clinics (CBOC's) for the express purpose of improving the access to primary health care for America's veterans.

The VA Medical Center in Salt Lake City has identified in its strategic plan the need to activate a CBOC to serve the existing 2500 patients living in Weber and Davis counties, Utah. In addition, the total veteran population of these two counties exceeds 34,000 and therefore represents future marketing opportunities for the expansion of Salt Lake VAMC's patient base.

The purpose of this Graduate Management Project (GMP) is to document a portion of the CBOC planning process I have developed to respond to the management question: "Where is the optimal location to provide primary health care services in order to best meet the needs of our patient population living in Weber and Davis counties?" Two research subquestions are address in this GMP: 1.)What are the important clinical components of primary health care that required to meet the needs of our patient population?, and 2.) Where is the optimal location from which to deliver these primary health care services that will best meet the accessibility requirements of our patient population?

The core elements of this GMP consist of a *needs assessment for a defined population* based upon a service utilization model, and a *location determination analysis* that focuses on the veteran population distribution according to zip codes in Weber and Davis counties. Conclusions include the identification of clinical services to support the population and an optimal location to provide care.

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INTRODUCTION

Upon my return from the didactic portion of the U.S. Army - Baylor University Graduate Program in Health Care Administration in July 1996, I resumed the full array of responsibilities of my former position at the Salt Lake City VA Medical Center. As a member of the organization's leadership team, I was soon assigned the responsibility to comprehensively organize and coordinate this medical center's effort to implement a number of new ambulatory health care (primary care) access points.

The VISN 19 Strategic Plan identified four new access points for this medical center to implement within calendar year 1997. These primary care access points, referred to as Community Based Outpatient Clinics (CBOC's), were prioritized based upon the size of the area's veteran population. Salt Lake City VAMC's first identified priority was to establish a CBOC to serve eligible veterans living in the Weber and Davis county area of northern Utah. Weber and Davis counties are shown as part of VAMC Salt Lake City's Primary Service Area in Figure 1. A total of over 34,000 veterans currently reside in Weber and Davis counties.

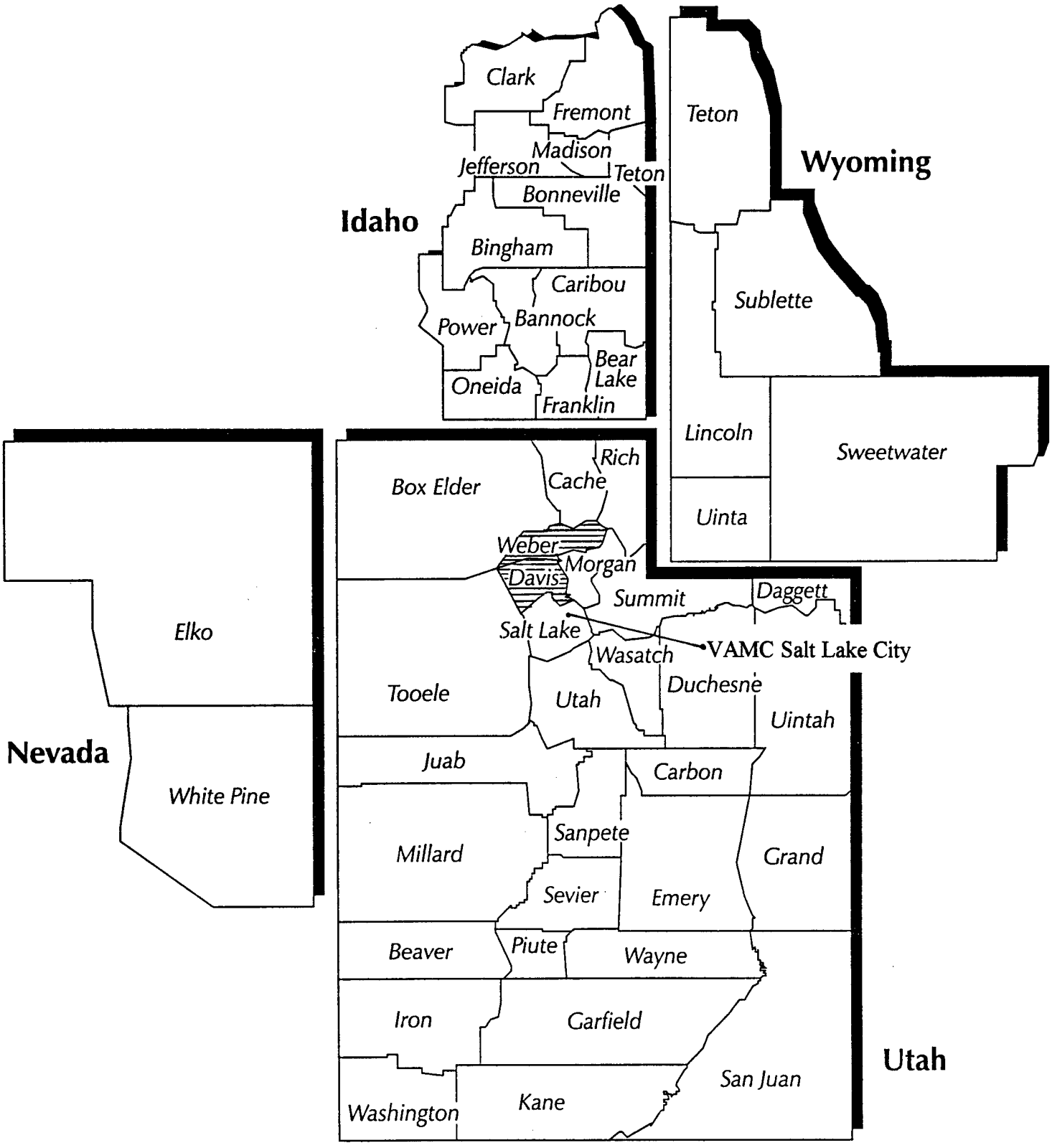
For the purposes of my administrative residency, I have elected to document a portion of the planning process I have developed for our CBOC initiative in Weber and Davis county area in fulfillment of the requirements of the Graduate Management Project (GMP).

BACKGROUND

Shortly after the installation of his Administration, President Clinton initiated an important campaign promise by developing an approach to *Health Care Reform.* His proposal for health care reform, H.R. 3600 known as the Health Security Act (HSA), was developed and organized by over 30 work groups composed of health, administrative, and financial experts. VA was

Figure 1

Salt Lake City VA Medical Center Primary Service Area(PSA)



represented on each of the major work groups, with one group devoted solely to the Department of Veterans Affairs.

In October 1993, the Secretary of Veterans Affairs established the VA Health Care Reform Board. In this process, the Secretary also established the National Health Care Reform Program Office to develop and implement a coordinated and comprehensive approach to VA's successful participation in national health care reform (U.S. Department of Veterans Affairs, 1994). The Program Office organized 19 working groups composed of VA clinical, management, finance and policy experts, as well as representatives from veterans service organizations and the medical community at large. The results of the working groups included a strong recommendation to integrate the VA's health care delivery system utilizing principles of managed care. This recommendation specified *primary care* as the foundation of the managed care system because it serves as the entry, referral, and coordination point for all patient care (U.S. Department of Veterans Affairs, 1994).

Despite the failure of H.R. 3600, VA continued to pursue the development of its integrated health care delivery system. This effort received a tremendous boost upon the Senate's confirmation of Kenneth W. Kizer, M.D., M.P.H. as the VA's new Undersecretary for Health in September 1994. Dr. Kizer immediately set about to re-engineer the veterans health care system. By January 1995, his reorganization plan, *Vision for Change*, was taking shape and in March, the blue print for the new Veterans Health Administration (VHA) was sent to Congress. In his plan, Dr. Kizer eloquently states a profound fact: "The delivery of health care in the U. S. is dramatically changing. If the Veterans Health Administration is to remain a viable health care option for veterans, it needs to substantially change its approach to providing care (Kizer, 1995)."

The *Vision for Change* identifies technological advances, economic factors, demographic changes and the rise of managed health care, among other things, as the primary causes of the dramatic shift away from inpatient care and a corresponding increase in ambulatory care. The plan also simply states that "VHA needs to adapt its service delivery to align with changes occurring in the larger health care environment (Kizer, 1995)." Importantly, the *Vision for Change* identified several key points in describing the manner in which the provision of veterans health care will fundamentally change. These points included, among others, increasing ambulatory care access points and emphasizing primary care (Kizer, 1995). Also key among the reorganization's goals was the formation of cooperative networks of facilities (Veterans Integrated Service Networks or VISNs) designed to work together to better serve veterans.

In March 1996 Dr. Kizer published *Prescription For Change: The Guiding Principles and Strategic Objectives Underlying the Transformation of the Veterans Healthcare System*. The *Prescription for Change* contains the mission of the "New VA". The mission of the veterans healthcare system is to improve the health of the served veteran population by providing primary care, specialty care, extended care and related social support services in an integrated healthcare deliver system. This document further stipulated "The Four Domains of Value:" 1.) Cost/price; 2.) Technical quality; 3.) Customer satisfaction; and 4.) Access.

The following elements excerpted from the *Prescription for Change* support increasing ambulatory care access points and emphasizing primary care:

VHA Mission Goal One: Provide Excellence in Healthcare Value

Objective 2. Reduce operating costs.

Action 1. Transition the veterans healthcare system from a hospital bed-based system to an

ambulatory care-based system.

Action 3. Increase VA's outpatient capacity to accommodate the workload shifted from inpatient to outpatient settings and to obviate the need for as much inpatient care as possible.

Action 4.4. Promulgate policies encouraging use of the most cost-effective, therapeutically appropriate care setting.

Action 5. Establish *primary care* as the central focus of patient treatment in both outpatient and inpatient settings.

Action 6. Expand VHA's continuum of clinical service settings (i.e., treatment site alternatives) so that patient care can be provided in the most cost-effective setting that is clinically appropriate.

Action 10. Explore ways of improving the accessibility, quality and cost-effectiveness of VA's special emphasis programs.

Action 12. Increase the proportion of VA's care giver workforce providing primary care.

VHA Mission Goal Two: Provide Excellence in Service as Defined by Customers

Objective 19. Increase accessibility to VA services.

Action 1. Bring clinical and other care sites and services closer to the patient.

Action 2. Clarify the criteria for siting additional community care access points.

Action 3. Decrease waiting times for appointments.

Action 4. Improve continuity of care.

By the fall of 1996, the twenty-two VISNs were operational and the change was being felt in hundreds of VA facilities. As directed in *Prescription for Change*, the Networks were actively

developing their own strategic plan for implementing the identified objectives. The Rocky Mountain Network's (VISN 19) Strategic Plan was submitted to VHA in December 1996. The number one priority strategic target identified in this plan is as follows:

> To allow maximum accessibility to as many eligible veteran patients as possible, health care services must be redistributed in the network, principally to veteran population centers.

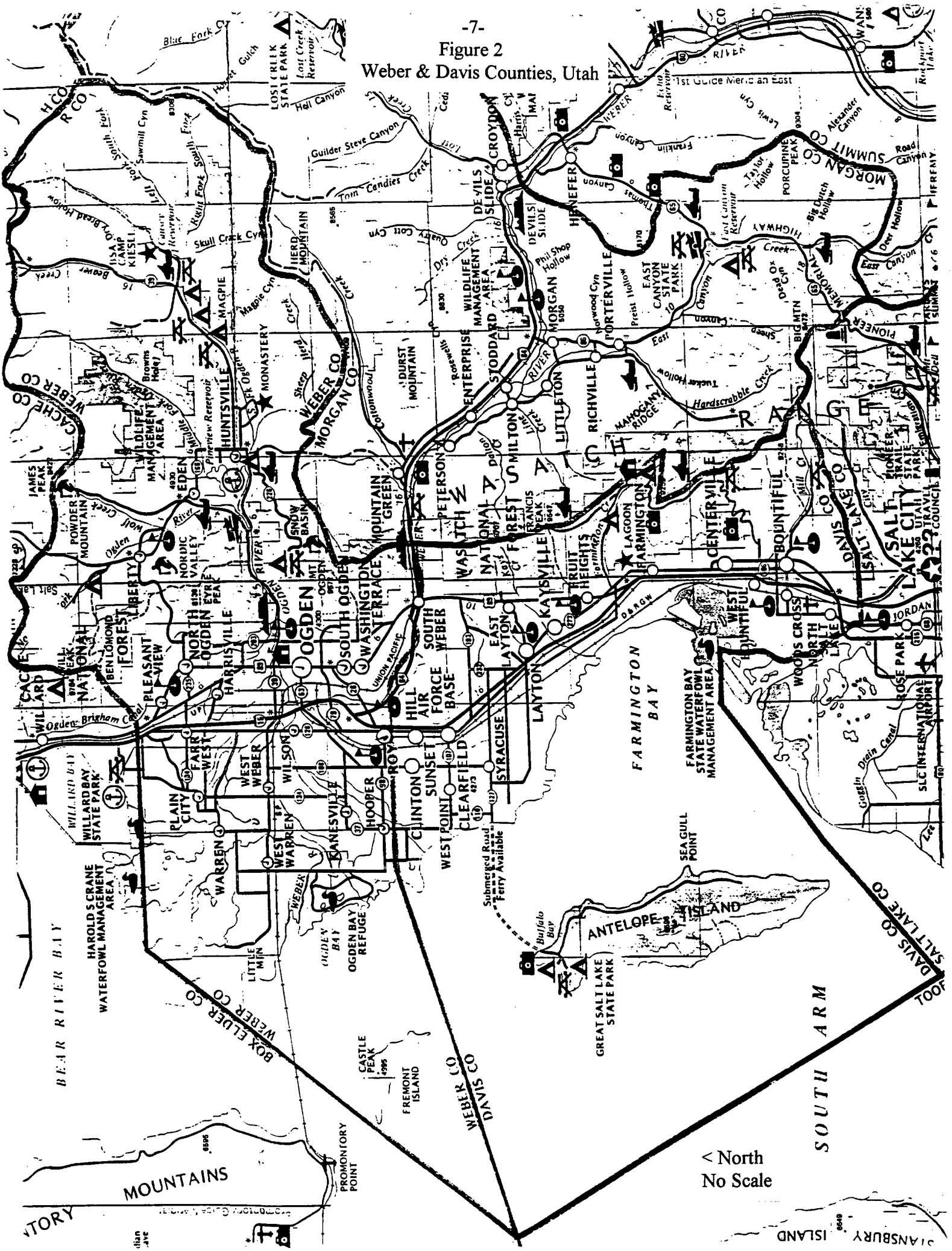
The Network's Strategic Plan directs the network health care delivery system to the accomplishment of the identified targets. This will be accomplished, in part, through the implementation of an increased number of new access points for primary care delivered closer to patients' homes and an increase in resources committed to established clinic access points closest to patient homes (Veterans Health Administration, 1996).

CONDITIONS WHICH PROMPTED THE STUDY

In conformance with the VISN 19 strategic target of maximizing primary care accessibility to as many eligible veteran patients as possible, health care services will be redistributed within the network to veteran population centers. The identification of the Weber/Davis county area as a veteran population center was first documented in the 1994 Health Care Reform Investment Strategy Proposal prepared by VAMC Salt Lake City. Our investment strategy proposed a primary care access point to serve eligible veterans residing in the Ogden and Layton, Utah communities. Figure 2 illustrates the numerous communities located in Weber and Davis counties.

The primary purpose of establishing a CBOC in the Weber/Davis county area is to provide high quality primary care in a convenient location closer to the homes of our existing patients. In

Figure 2
Weber & Davis Counties, Utah



addition, our goal is to provide the high quality primary care in a setting of the lowest possible cost to our medical center. In general terms, we expect all of the benefits of improved primary care access to accrue to our patient beneficiaries. These include, but are not limited to, the following:

- Primary health care access for veterans living in this two-county area will be immediate.
- Quality of care will be improved through more timely access to care, with an increased emphasis on preventive care and wellness management.
- Elderly and disabled veterans will require substantially less travel to the congested Salt Lake City area. Delays and risks associated with traveling in inclement winter weather for care will be greatly reduced for our older, frail veterans.
- Improved quality of care through ease of access in terms of continuity of care, patient compliance, and enhanced attention to medical concerns.
- Enhanced patient satisfaction resulting from all the above stated benefits.

This medical center expects additional beneficial outcomes from the activation of a CBOC in the Weber/Davis community. In addition to improved quality of care and patient satisfaction, we expect direct financial benefits from this CBOC. Care to our existing veteran patients will be provided at significantly lower cost when compared to current services provided in our hospital-based setting. These benefits will accrue in the following ways:

- This CBOC contributes to our overall realignment from inpatient care to an ambulatory care orientation. Long term cost reductions are expected from this fundamental shift in focus.

  A substantial reduction in Beneficiary Travel costs are expected when our existing veteran

patient population in this area has access to care in their home communities.

- A corresponding reduction in Fee Basis costs are also expected through the provision of primary care in our patient's home community.

STATEMENT OF THE QUESTION

Within the context of the CBOC planning process, the management question that has prompted this study can best be defined as: "Where is the optimal location to provide primary care services in order to meet the needs of our Weber/Davis patient population?" This management question has been further refined by the following two research subquestions that will be addressed in the GMP:

1.) What are the important clinical components of primary care that should be provided to meet the health care needs of our unique patient population in Weber and Davis counties? This determination will identify the composition of the primary health care services required to meet the needs of our population with a specific focus on our "at-risk" patients.

2.) Where is the best location from which to provide these primary health care services that will best meet the accessibility requirements of our patient population in Weber and Davis counties?

These two research questions will be addressed separately in the GMP and will be referred to in the following abbreviated fashion:

1.) Needs Assessment

2.) Location Determination

LITERATURE REVIEW

As previously established, the general focus of this GMP is best described as *access to care.* This concept has been broadly addressed in the literature. The Institute of Medicine (IOM) has defined *ACCESS* as the "degree to which individuals...are able to obtain needed services" (Institute of Medicine 1993). The likelihood of an individual receiving timely and appropriate health care services is influenced by two dimensions: the personal characteristics of the individual and the characteristics of the health care delivery system (Aday, Fleming, and Andersen 1984).

Aday, Fleming and Andersen specifically describe the three categories of personal characteristics that influence whether an individual seeks health care as predisposing factors, enabling factors, and *need.* Predisposing factors are those that increase and individual's tendency to seek care, such as age and education. Enabling factors are those, such as insurance coverage and income, which provide an individual with the means for seeking care. *Need,* as defined by Aday, Fleming, and Andersen, is a measure of health status; that is, individuals in poor health are more likely to require health care services. Researchers have shown that health status as a measure of *need* is the strongest predictor of utilization (Mentnech et al. 1995).

The characteristics of the health care delivery system are described by these same authors as important elements that influence the likelihood an individual will receive appropriate health care services. These elements include factors such as the cost of care, the quality of the care that is delivered, and *location* from which the care is available (Aday, Fleming, and Andersen 1984).

The literature contains multiple other works outlining various aspects of the issue of access to care, including descriptions of barriers to care (Yeatts, Crow, and Folts 1992), as well as works that demonstrate access alone does not always prevent disease and disability (Lee 1993).

Having set the stage with a broad summary based upon the concept of *access to care,* the review of the literature will now focus on the two resultant primary themes: *need* and *location of care.*

Determining health care needs for populations as well as individuals is best accomplished with what the literature terms as a *needs assessment.* Principally, five methods of *needs assessment* have thus been identified. These methods are as follows: a.) Epidemiologically based needs assessment, b.) Marginal Analysis, c.) Self reported "perceived" health needs survey, d.) Community Board needs assessment, and lastly, e.) Utilization Review based needs assessment.

In the first identified method, Stevens and Raftery (1995) propose an epidemiologically based needs assessment that uses scientific evidence of appropriateness and effectiveness as a criterion for the provision of health care services. The researchers contrast their method against traditional views that people's demands for health care are based on their desire to be healthy. These researchers focus instead on people's ability to benefit from health care service delivery.

Poised at the opposite end of the "methods of needs assessments spectrum", marginal analysis is offered by Cohen (1994) as an alternative to traditional needs assessments. This model is recommended chiefly as a means of prioritizing health care needs for defined populations particularly when the introduction of new programs must be accomplished in a resource neutral manner. As the name implies, the marginal analysis method is driven by contemporary health care economic principles. An example of such a principle is as follows: the overall economic efficiency will increase when the marginal gain in benefit of new or expanding programs exceeds the marginal loss of benefit in the contracting programs (Cohen 1994).

Health needs assessments for many years have been conducted by means of surveys of

individuals who self-report their "perceived" health needs (Bennett 1993). Typically, these surveys are employed to collect information from defined at-risk populations, such as selected patients of the Veterans Health Administration. This model is often successful when an important goal of the effort is to involve the community or the at-risk population in the assessment.

The use of community policy/advisory boards to establish health care needs and priorities has been documented as successful in the work of Conway, Hu, and Harrington (1997). Their work evaluated and verified the validity and accuracy of this method of needs assessment. This represents another method of conducting needs assessments when consumer and community participation in the development of health programs is considered important. Community policy/advisory board members demonstrate an appreciation of the importance of social problems to the health status of their respective communities (Conway, Hu, and Harrington 1997).

Wallace (1994) considers in his work several basic methods of characterizing health status, generally from a quantitative perspective, and emphasizing older persons. From preventive, clinical, and administrative perspectives, most efforts in the characterizing and classifying of health states focus on individuals. Highlighted in Wallace's work is a model based upon utilization review (UR) that is derived from the clinical process of providing care to the individual. He argues that in most population-based research surveys, the majority of individual health measures, whether self-report or performance testing, are elicited in a clinically stable state. This limits the survey to responses from only those persons who are able to endure the interview and performance tasks. One consequence is that many ill or impaired persons do not participate in surveys. This can result in the underestimation of population disease levels (Wallace 1994). Wilkin, Hallam, and Doggett (1992) identify a limitation of this type of model in that professional

judgements about needs in the realm of health care often avoid defining goals and standards. Clinicians instead define needs in terms of the specific techniques within their sphere of competence (Wilkin, Hallam, and Doggett 1992).

For the purposes of conducting the needs assessment portion of this GMP, I have elected to use a method based upon Wallace's utilization review model. In that his method is driven by the clinical process of the provision of health care, I will utilize aggregated UR data that is a by-product of care delivered to my defined population in Weber and Davis counties.

Turning now to the theme of *location of care,* numerous parallels exist in the literature between placing retail and service outlets and factors affecting the choice of location of primary care clinics. Laulajainen and Stafford (1995) offer an excellent summary of the factors bearing on the location of business, retail and manufacturing facilities. The spatial distribution of the market is the single most important consideration in the location and continued prosperity of commercial enterprises. Generally this statement holds true, with limited exceptions in the realm of entities with dominant reliance on inexpensive labor. This applies as well to the provision of primary care health services.

The location factors most important for commercial markets are the characteristics of the areas under consideration and the concept of *friction of distance.* Area characteristics include elements such as the availability of labor, business climate, the quality of life, government influences, and the physical characteristics of the specific site. Of greater importance for commercial facilities is the friction of distance concept which holds that customers will not travel any further than necessary to reach an acceptable retail/commercial outlet (Laulajainen and Stafford 1995). The concept of *nearness to markets* has important benefits that accrue to

commercial as well as health care facilities and are worthy of mentioning in this review: a.) decreases customer travel time, b.) reduces delivery times, and c.) reduces customer warehousing needs (Laulajainen and Stafford 1995). It is a simple exercise to apply these concepts to placing health care facilities.

Current trends covered in the health care literature include initiatives for health care networks to decentralize services and spread resources across communities in an effort to improve access by establishing satellite primary care clinics in bedroom communities. Provider networks also realize improved efficiencies, reduced health care delivery costs and better access by providing primary care clinics in areas where their patients are located (Taylor 1994). In addition, networks are striving to offer all needed services in one convenient location, with cross-trained staff. This makes primary care clinics operationally more efficient and enhances marketability. The issue is not just patient convenience, but maximum facility productivity within a capitated payment system (Sprow 1995).

Significant similarities exist among VA and Medicare patients. For example, 35.6% of VA users are age 65 and older and 70.5% of VA users have annual incomes less than $20,000 (Wilson and Kizer 1997). Given these similarities, it is of interest to include a review of information relating to Medicare patients' access to physicians. Hogan, Eppig, and Waldo (1995) present summary data that indicates that 83.4% of current Medicare beneficiaries drive or are driven to their health care provider, while only 2.8% of these patients use public transportation. Travel times to reach providers average less than one hour for all modes of transportation, while 2% of all Medicare beneficiaries travel more than one hour (one-way) to access care with their provider (Hogan, Eppig, and Waldo 1995).

This base of literature provides a solid foundation upon which to proceed with this GMP's methods and procedures in order to respond to the management questions. Clear linkage is established with procedural models contained in the literature to justify the use of a UR based method of need assessment. The primary care location analysis is based solidly in all of the principles summarized in the section addressing the pertinent literature.

SUPPORTING OBJECTIVES FOR THE STUDY

The purpose of this study is to determine the specific scope of services that need to be provided in the CBOC serving the Utah counties of Weber and Davis. In addition, this study will also determine the optimal location for the delivery of these services.

The objectives of this study are as follows:

A. Identify and analyze the geographic distribution of the 1.) total veteran population and; 2.) population of existing veteran patients treated by our facility in FY 1996.

B. Determine the patterns of health care resource utilization by the population of existing veteran patients. The following quantified data elements are used in this analysis: 1.) outpatient visits; 2.) discharges by major diagnostic category (MDC); and 3.) outpatient CPT codes .

To summarize, reviewing the objectives of this study will allow the reader to discover the trends of health care resource utilization by this population of patients and where, specifically, the patterns of utilization occur. The assumption is that past trends of health care resource utilization at this acute care medical center will continue along similar patterns and that comparable demands (as indicators of *need* and within the scope of primary care services) will be placed upon resources provided at the CBOC. Health care utilization is a manifestation of

demand, which in turn is an expression of a judgement that health care is needed (Liss 1993).

METHODS AND PROCEDURES

This GMP is an exploratory investigation of the management question: "Where is the optimal location to provide primary care services in order to meet the needs of our Weber/Davis existing patient population?" This investigation employs the exploratory techniques of qualitative and quantitative analysis of secondary data. No primary data has been nor will be collected for this exploratory investigation. The secondary data has been obtained from internal as well as external sources. The source of the internal data is the Veterans Health Administration's Decentralized Hospital Computer Program (DHCP) centralized database located in Austin, Texas. All utilization review data collected for our existing patient population residing in the Utah counties of Weber and Davis has been obtained from DHCP files. External sources of data include the 1990 census data obtained by VHA from the U.S. Bureau of the Census that currently resides within the DHCP database in Austin. Additional external sources of information are current literature and books pertaining to this investigation.

This exploratory investigation has a descriptive purpose to address the following questions: a.) What primary health care services have been used in the past five years by our existing Weber and Davis county patient population, and b.) Where is the single location that is in the closest proximity to the maximum number of existing patients residing in Weber and Davis counties. The first question will be answered through a quantitative analysis of utilization review data that will consist of the summation of aggregated CPT codes (and other ambulatory care based data) to determine the rank order of specific health care services consumed by the identified patient population. The second question will be answered by a analysis of data portraying the

total number of existing patients residing in each zip code assigned to Weber and Davis counties.

The demographic data used in this investigation represents a cross sectional time dimension of this study due to the fact the data represents the 1990 census. Utilization review data represents a longitudinal time dimension because data from the years FY 1992 - 1996 is used to assess the need for primary health care services by the identified population.

The topical scope of this exploratory investigation represents a statistical study. The intent of this statistical study is to learn more about the potential utilization characteristics of the total veteran population by making inferences from the utilization trends exhibited by our existing patient population.

Regarding the issues of validity and reliability, this exploratory investigation involves no measurement of empirical events. Secondary data is used for the entire investigation. The secondary data contains demographic information wherein our existing patients are the objects and selected properties of these objects (zip codes of residences, health care utilization information, etc.) are described in numerical format. The origin of this secondary data is from direct provider input derived from the clinical process. It is collected through the VHA's standard DHCP programs supporting all clinical processes involving the delivery of care. This consistent source of data collection methodology assures this investigation of good content validity. In addition, this system of data collection at the point of care provides a high degree of reliability across a wide spectrum of providers acting as data collection and entry personnel.

The following summary of procedures has been established for the needs assessment component of the GMP:

1.) Identify pool of existing patients residing in Weber and Davis counties (FY 96).

2.) Secure DHCP UR data for the identified patient population.

3.) Quantify the total number of ambulatory care visits and inpatient discharges by county for the identified patient population.

4.) Identify ambulatory care and inpatient care utilization trends using CPT and MDC/DRG codes.

5.) Rank order the highest utilization patterns for ambulatory and inpatient care services based upon the CPT and MDC data.

6.) Document the leading ambulatory care services consumed by this population.

7.) Document the leading inpatient care services consumed by this population.

8.) Summarize the conclusions that address the needs assessment component.

The following summary of procedures has been established for the location determination component of the GMP:

1.) Identify the pool of existing (FY 1996) patients residing in either Weber or Davis county.

2.) Sort this pool of existing patients by zip code of place of residence.

3.) Rank order (highest to lowest) zip code areas by existing patient population.

4.) Map the existing patient geographic distribution within the counties of Weber and Davis using the total existing patient population according to zip code area.

5.) Identify the zip code locations of concentrations of existing patients.

6.) Summarize conclusions of the location determination component by indicating an area with the potential of serving the greatest number of existing patients.

RESULTS

For this section of the GMP addressing the results of this exploratory investigation, I will provide the results of the Location Determination component first, and then followed by the results of the Needs Assessment component.

By accessing VHA's central DHCP database, specific information downloads identified in the Methods and Procedures section were obtained and analyzed for this investigation. Fourteen distinct zip codes were identified for Weber County and thirteen zip codes were identified for Davis County. A total of 2532 patients reside in this study area with 1226 living in Weber County and 1306 in Davis County respectively. Table 1 summarizes the FY 1996 Existing Patient Population arranged by zip codes for the two county area. (Selected utilization review data is included on Table 1 in an effort to make efficient use of tables. The UR information will be addressed in the Needs Assessment section below.)

For the purposes of considering future marketing opportunities in the study area, data describing the total population of veterans has been included. Table 2 summarizes the Total Veteran Population in these two counties and also arranges this additional data by zip code. The rates of market penetration of the VAMC arranged by zip code are provided in a separate column on Table 2.

In order to determine zip codes with the largest numbers of existing patients as well as total veterans, a sort was done for each population. For existing patients and total veteran populations respectively, Table 3, FY 1996 Existing Patient Population, and Table 4, Total Veteran Population, provide the rank order of zip codes in descending sequence. The relative density and geographic distribution of the FY 96 Patient Population are portrayed on Figure 3. Figure 4 depicts the relative density and geographic distribution of the Total Veteran Population.

Table 1

FY 1996 EXISTING PATIENT POPULATION: UR DATA BY ZIP CODE

Location	Zip Code	Number of Patients	Total Outpatient Visits	O. P. Visits per patient	Inpatient Discharges	Discharges per 100 patients
WEBER COUNTY						
Roy	84067	200	1228	6	37	19
Eden	84310	17	102	6	6	35
Hooper	84315	22	111	5	2	9
Huntsville	84317	16	107	7	3	19
Ogden	84201	1	1	1	0	0
Ogden	84401	271	1634	6	81	30
Ogden	84402	25	173	7	13	52
Ogden	84403	210	1409	7	72	34
Ogden	84404	259	1874	7	97	37
Ogden	84405	140	1074	8	28	20
Ogden	84408	3	8	3	2	67
Ogden	84409	9	83	9	2	22
Ogden	84412	7	52	7	0	0
Ogden	84414	46	341	7	10	22
TOTALS:		1226	8197		353	
DAVIS COUNTY						
Bountiful	84010	264	2750	10	101	38
Bountiful	84011	12	51	4	3	25
Centerville	84014	48	415	9	13	27
Clearfield	84015	294	1997	7	67	23
Clearfield	84016	2	4	2	0	0
Farmington	84025	36	329	9	9	25
Kaysville	84037	82	612	7	26	32
Layton	84040	110	795	7	24	22
Layton	84041	313	1725	6	45	14
North Salt Lake	84054	61	614	10	22	36
Hill Air Force Base	84056	8	14	2	1	13
Syracuse	84075	33	230	7	13	39
Woods Cross	84087	43	353	8	15	35
TOTALS		1306	9889		339	
WEBER & DAVIS TOTALS:		**2532**	**18086**		**692**	

	WEBER	DAVIS
AVERAGE OUTPATIENT VISITS PER PATIENT PER YEAR:	6	7
AVERAGE INPATIENT DISCHARGES PER 100 PTS. PER YEAR:	26	25

FY 1996 EXISTING PATIENT POPULATION & TOTAL VETERAN POPULATION BY ZIP CODE

Location	Zip Code	Number of Patients	Total Veteran Population	Market Penetration	Rank by Number of Patients	Rank by Veteran Population
WEBER COUNTY						
Roy	84067	200	2445	8.2%	7	6
Eden	84310	17	168	10.1%	19	22
Hooper	84315	22	822	2.7%	18	13
Huntsville	84317	16	222	7.2%	20	19
Ogden	84201	1	8	12.5%	27	27
Ogden	84401	271	2073	13.1%	3	8
Ogden	84402	25	191	13.1%	17	21
Ogden	84403	210	3261	6.4%	6	4
Ogden	84404	259	3813	6.8%	5	2
Ogden	84405	140	2221	6.3%	8	7
Ogden	84408	3	47	6.4%	25	25
Ogden	84409	9	69	13.0%	22	24
Ogden	84412	7	202	3.5%	24	20
Ogden	84414	46	1326	3.5%	13	10
	totals	1226	16868	8.1%		
DAVIS COUNTY						
Bountiful	84010	264	3672	7.2%	4	3
Bountiful	84011	12	167	7.2%	21	23
Centerville	84014	48	846	5.7%	12	12
Clearfield	84015	294	2897	10.1%	2	5
Clearfield	84016	2	20	10.0%	26	26
Farmington	84025	36	603	6.0%	15	15
Kaysville	84037	82	1862	4.4%	10	9
Layton	84040	110	1280	8.6%	9	11
Layton	84041	313	3907	8.0%	1	1
North Salt Lake	84054	61	542	11.3%	11	16
Hill Air Force Base	84056	8	257	3.1%	23	18
Syracuse	84075	33	694	4.8%	16	14
Woods Cross	84087	43	477	9.0%	14	17
TOTALS:		1306	17224	7.3%		
WEBER & DAVIS TOTALS:		**2532**	**34092**	7.7% average		

NOTES:

1 Market penetration represents the percentage of the total veteran population that received care at VAMC Salt Lake City in FY 1996.

2 Rank by Number of Patients and Veteran Population represents a descending ranking: the Zip Code with the largest population respectively is ranked no. 1.

Table 3

FY 1996 EXISTING PATIENT POPULATION:
SORTED DESCENDING BY NUMBER OF PATIENTS PER ZIP CODE

Location	Zip Code	Number of Patients	Total Outpatient Visits	O. P. Visits per patient	Inpatient Discharges	Discharges per 100 patients
Layton	84041	313	1725	6	45	14
Clearfield	84015	294	1997	7	67	23
Ogden	84401	271	1634	6	81	30
Bountiful	84010	264	2750	10	101	38
Ogden	84404	259	1874	7	97	37
Ogden	84403	210	1409	7	72	34
Roy	84067	200	1228	6	37	19
Ogden	84405	140	1074	8	28	20
Layton	84040	110	795	7	24	22
Kaysville	84037	82	612	7	26	32
North Salt Lake	84054	61	614	10	22	36
Centerville	84014	48	415	9	13	27
Ogden	84414	46	341	7	10	22
Woods Cross	84087	43	353	8	15	35
Farmington	84025	36	329	9	9	25
Syracuse	84075	33	230	7	13	39
Ogden	84402	25	173	7	13	52
Hooper	84315	22	111	5	2	9
Eden	84310	17	102	6	6	35
Huntsville	84317	16	107	7	3	19
Bountiful	84011	12	51	4	3	25
Ogden	84409	9	83	9	2	22
Hill Air Force Base	84056	8	14	2	1	13
Ogden	84412	7	52	7	0	0
Ogden	84408	3	8	3	2	67
Clearfield	84016	2	4	2	0	0
Ogden	84201	1	1	1	0	0
TOTALS:		2532	18086		692	

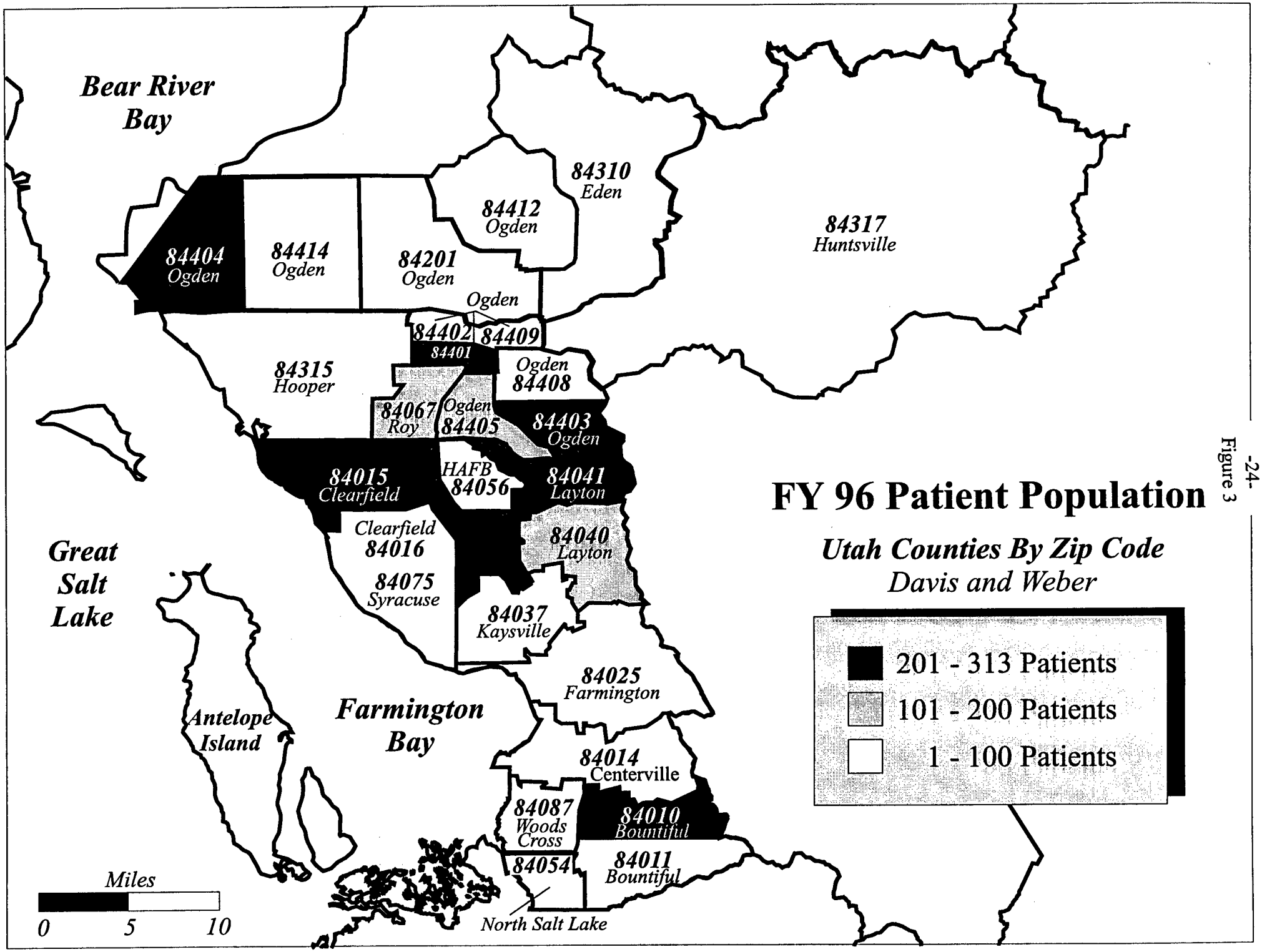
NOTE:
For ease of interpretation, this ranking combines data for Weber and Davis counties.

Table 4

TOTAL VETERAN POPULATION:
SORTED DESCENDING BY NUMBER OF VETERANS PER ZIP CODE

Location	Zip Code	Number of Patients	Total Veteran Population	Total Outpatient Visits	Inpatient Discharges
Layton	84041	313	3907	1725	45
Ogden	84404	259	3813	1874	97
Bountiful	84010	264	3672	2750	101
Ogden	84403	210	3261	1409	72
Clearfield	84015	294	2897	1997	67
Roy	84067	200	2445	1228	37
Ogden	84405	140	2221	1074	28
Ogden	84401	271	2073	1634	81
Kaysville	84037	82	1862	612	26
Ogden	84414	46	1326	341	10
Layton	84040	110	1280	795	24
Centerville	84014	48	846	415	13
Hooper	84315	22	822	111	2
Syracuse	84075	33	694	230	13
Farmington	84025	36	603	329	9
North Salt Lake	84054	61	542	614	22
Woods Cross	84087	43	477	353	15
Hill Air Force Base	84056	8	257	14	1
Huntsville	84317	16	222	107	3
Ogden	84412	7	202	52	0
Ogden	84402	25	191	173	13
Eden	84310	17	168	102	6
Bountiful	84011	12	167	51	3
Ogden	84409	9	69	83	2
Ogden	84408	3	47	8	2
Clearfield	84016	2	20	4	0
Ogden	84201	1	8	1	0
TOTALS:		2532	34092	18086	692

NOTE:
For ease of interpretation, this ranking combines data for Weber and Davis counties.


Bear River Bay
84404 Ogden
84414 Ogden
84201 Ogden
84412 Ogden
84310 Eden
84317 Huntsville
Ogden
84402
84409
84401
84315 Hooper
Ogden 84408
84067 Roy
Ogden 84405
84403 Ogden
84015 Clearfield
HAFB 84056
84041 Layton
Clearfield 84016
84040 Layton
84075 Syracuse
84037 Kaysville
Great Salt Lake
84025 Farmington
Antelope Island
Farmington Bay
84014 Centerville
84087 Woods Cross
84010 Bountiful
84054
84011 Bountiful
North Salt Lake
Miles
0 5 10
FY 96 Patient Population
Utah Counties By Zip Code
Davis and Weber
201 - 313 Patients
101 - 200 Patients
1 - 100 Patients

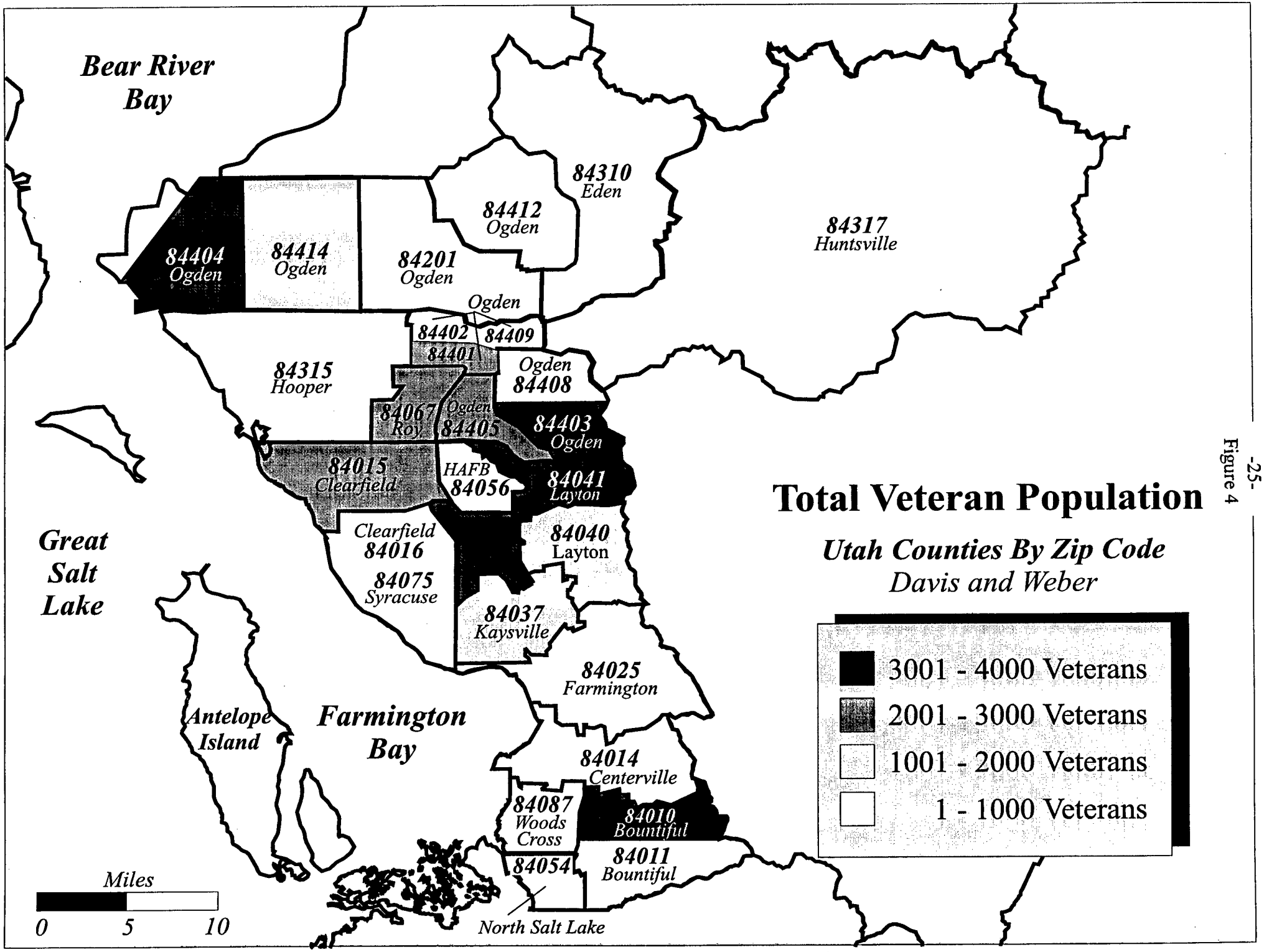

Bear River Bay
84404 Ogden
84414 Ogden
84201 Ogden
84412 Ogden
84310 Eden
84317 Huntsville
Ogden
84402
84409
84401
84315 Hooper
Ogden 84408
84067 Roy
Ogden 84405
84403 Ogden
84015 Clearfield
HAFB 84056
84041 Layton
Clearfield 84016
84040 Layton
84075 Syracuse
Great Salt Lake
84037 Kaysville
84025 Farmington
Antelope Island
Farmington Bay
84014 Centerville
84087 Woods Cross
84010 Bountiful
84011 Bountiful
84054
North Salt Lake
Miles
0 5 10
Total Veteran Population
Utah Counties By Zip Code
Davis and Weber
3001 - 4000 Veterans
2001 - 3000 Veterans
1001 - 2000 Veterans
1 - 1000 Veterans

Figure 4

Concentrations of both patient and total veteran populations are visible on Figures 3 and 4. These concentrations are located primarily in the large area surrounding Ogden proper and the smaller area of Bountiful in southern Davis County.

With the largest concentration of patient population in the two county study area found in the area around Ogden, analysis is now directed toward this location. A circle with a radius of five (5) miles drawn from the center of the city of Ogden inscribes this area of patient concentration. Figure 5 graphically portrays (including entire zip codes) the FY 1996 Concentration of Patient Population centered around Ogden. This zone is comprised of eleven zip codes and includes a patient population of 1583 individuals. A total of 18,648 veterans (including existing patients) or 55% of the total veteran population of the study area reside in this zone defined by the eleven zip codes. A summary of this information, arranged by zip codes, is included in Table 5, Analysis of Geographic Area with Concentration of Patient Population. Selected UR, which will be addressed later, information is also summarized on this table. Of significance is the fact that this zone of patient concentration contains approximately 63% of all existing patients found in the study area. This same patient group living within a five mile radius around Ogden also generates 56% of all outpatient visits and 54% of the inpatient discharges produced in FY 1996 in the study area.

The results of the Needs Assessment component of this exploratory investigation indicate that this defined population of 2,532 existing patients in FY 1996 produced 18,086 outpatient visits and 692 inpatient discharges (Table 1). For Weber and Davis counties respectively, these patients averaged six or seven outpatients visits per year at the Salt Lake City VAMC for FY 1996. In addition, the average number of inpatient discharges (per 100 patients) for FY 1996 were 26 from Weber County and 25 discharges per 100 patients for Davis County. This UR data

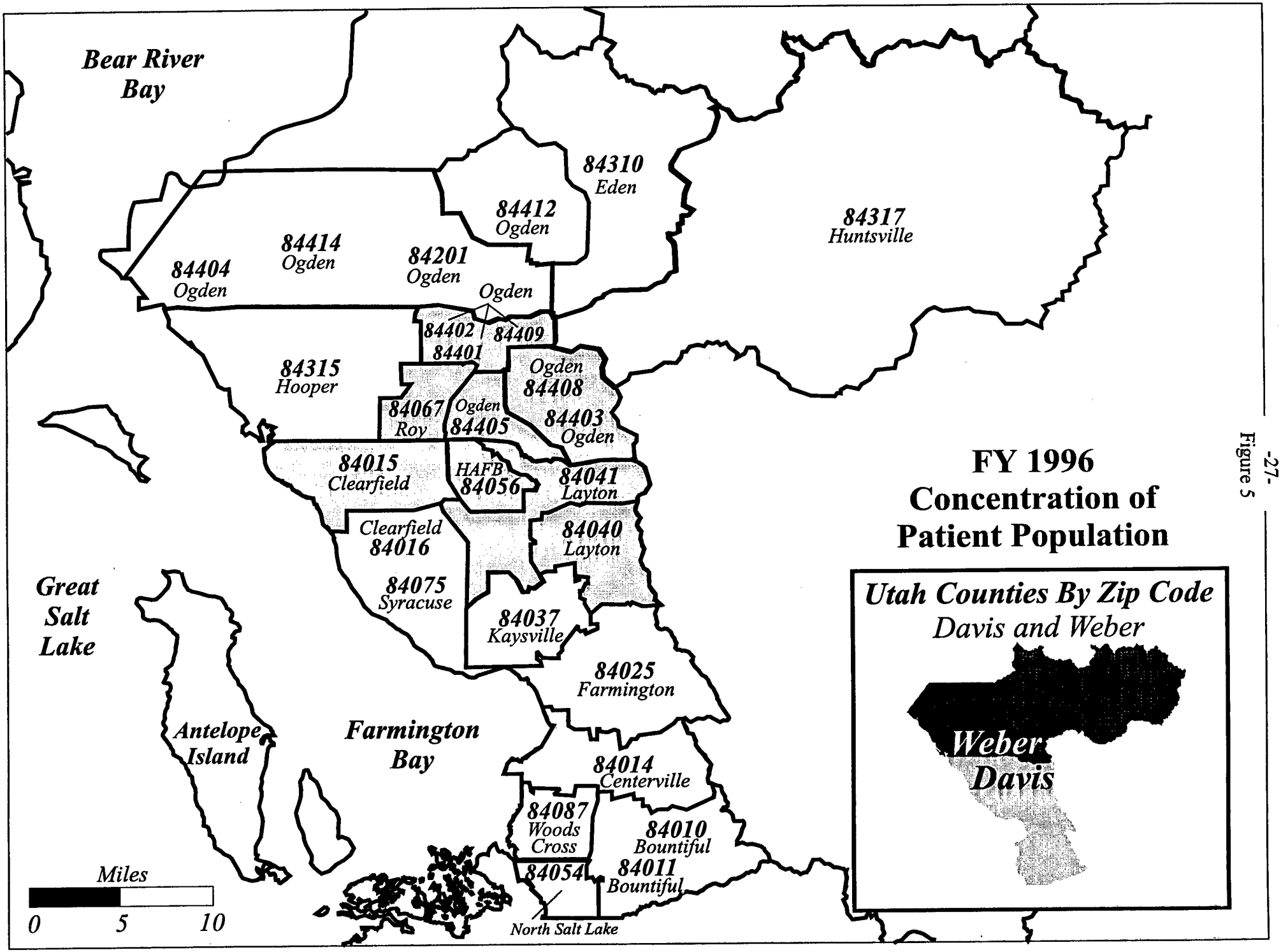

Bear River Bay
84310 Eden
84412 Ogden
84317 Huntsville
84414 Ogden
84201 Ogden
84404 Ogden
Ogden
84402 / 84409
84401
84315 Hooper
Ogden 84408
84067 Roy
Ogden 84405
84403 Ogden
84015 Clearfield
HAFB 84056
84041 Layton
Clearfield 84016
84040 Layton
84075 Syracuse
Great Salt Lake
84037 Kaysville
84025 Farmington
Antelope Island
Farmington Bay
84014 Centerville
84087 Woods Cross
84010 Bountiful
84054
84011 Bountiful
North Salt Lake
Miles
0 5 10
FY 1996
Concentration of
Patient Population
Utah Counties By Zip Code
Davis and Weber
Weber
Davis

Table 5

ANALYSIS OF GEOGRAPHIC AREA WITH CONCENTRATION OF PATIENT POPULATION

Location	Zip Code	Number of Patients	Total Outpatient Visits	Inpatient Discharges	Total Veteran Population
Ogden	84401	271	1634	81	2073
Ogden	84402	25	173	13	191
Ogden	84403	210	1409	72	3261
Ogden	84405	140	1074	28	2221
Ogden	84408	3	8	2	47
Ogden	84409	9	83	2	69
Clearfield	84015	294	1997	67	2897
Layton	84040	110	795	24	1280
Layton	84041	313	1725	45	3907
Hill Air Force Base	84056	8	14	1	257
Roy	84067	200	1228	37	2445
TOTALS		1583	10140	372	18648

SUMMARY OF AREA WITH CONCENTRATION OF PATIENTS

Total FY 1996 patient population of area:	1583
Percentage of total patient population in both counties:	**62.52%**
Total outpatient visits generated in area:	10140
Percentage of total outpatient visits in both counties:	**56.07%**
Total inpatient discharges generated in area:	372
Percentage of total inpatient discharges in both counties:	**53.76%**
Total veteran population of area:	18648
Percentage of total veteran population in both counties:	**54.70%**

is summarized further according to zip code in Table 1.

Ambulatory Care data was collected for the years FY 1992 through FY 1996 for the population of existing patients in the study area. Table 6, Summary of Procedures By CPT Code, contains an overview of the volume of outpatient care services provided to the identified population in the past five years. This information is presented as numbers of CPT code designated procedures in each CPT Category by year (FY 1992 - FY 1996) and county (Weber and Davis). The data presented indicate a uniform growth in utilization of ambulatory care services across years and CPT categories. Two exceptions to this "uniform growth" statement appear on Table 6. First, a spike in the number of procedures occurs in the category of Office/Outpatient Visits between FY 1992 and FY 1993 (Table 6). This marked increase in numbers of visits reflects a dramatic change in the way these visits were coded by providers and does not represent a change in workload at the VA Medical Center. The second striking increase in procedures is found between FY 1994 and FY 1995 in the Medicine CPT Category. The implementation of the primary care delivery model occurred in early FY 1995. The large increase in Medicine procedures during this period reflects this fact because our internal medicine physicians comprise the bulk of the primary care providers.

A detailed analysis was undertaken for the FY 1996 CPT coded information for the purposes of determining the ambulatory care services with the highest utilization by our defined population. Presented in Table 7, Summary of Procedures By CPT Code: FY 1996, is a list of CPT categories ranked by number of total procedures in descending order. The three categories with the highest rates of service utilization are: 1.) Office/Outpatient Visit comprising 39% of all CPT procedures; 2.) Medicine with 26% of the procedures, and 3.) Dental with 9%. The category totals and their respective percentages for FY 1996 are also summarized in Table 7.

Table 6

SUMMARY OF PROCEDURES BY CPT CODE: FY 1992 - FY 1996

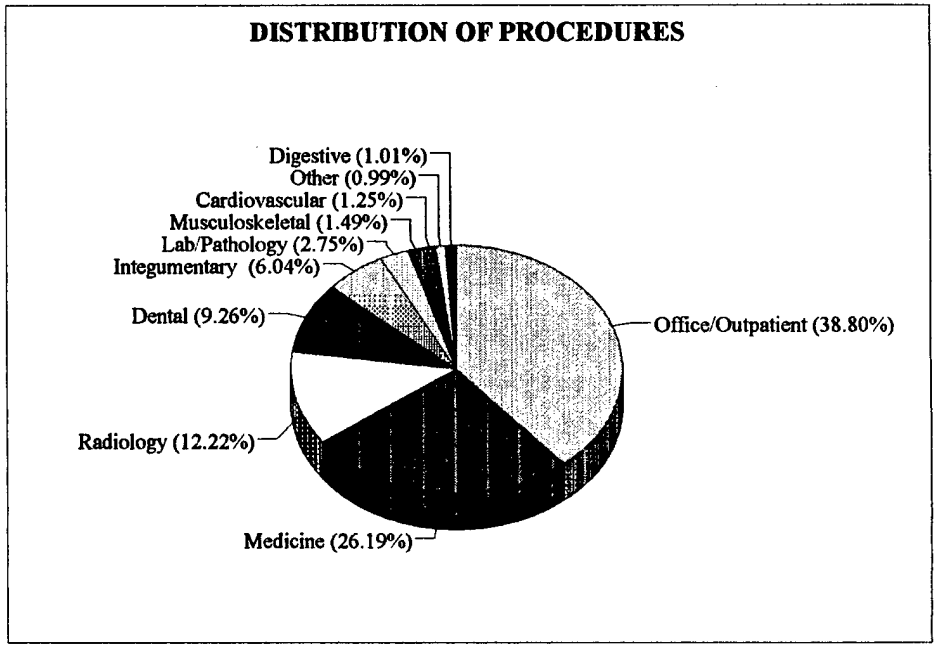
CPT CATEGORIES SORTED DESCENDING BY NUMBER OF PROCEDURES IN WEBER COUNTY IN FY 1996

CPT Category	Number of Procedures									
	FY 1992		FY 1993		FY 1994		FY 1995		FY 1996	
	WEBER	**DAVIS**	**WEBER**	**DAVIS**	**WEBER**	**DAVIS**	**WEBER**	**DAVIS**	**WEBER**	**DAVIS**
Office/Outpatient	0	2	664	786	2333	2818	2683	3132	2781	3352
Medicine	577	602	635	683	643	681	1815	2506	1800	2340
Radiology	841	775	850	819	914	1014	988	1029	851	1080
Dental	613	761	600	555	683	536	588	880	746	717
Integumentary	547	732	390	652	311	481	326	492	441	513
Lab/Pathology	3	1	0	3	19	10	28	51	189	246
Musculoskeletal	149	71	86	105	80	78	110	112	166	70
Cardiovascular	9	12	48	64	70	140	81	58	82	115
Other	10	20	35	23	52	44	40	58	70	87
Digestive	36	49	52	59	82	110	77	82	67	93
TOTAL	2785	3025	3360	3749	5187	5912	6736	8400	7193	8613
Combined Total	5810		7109		11090		15136		15806	

Table 7

SUMMARY OF PROCEDURES BY CPT CODE: FY 1996

CPT CATEGORY	FY 1996			
	WEBER	DAVIS	Total	Percent
Office/Outpatient	2781	3352	6133	39%
Medicine	1800	2340	4140	26%
Radiology	851	1080	1931	12%
Dental	746	717	1463	9%
Integumentary	441	513	954	6%
Lab/Pathology	189	246	435	3%
Musculoskeletal	166	70	236	1%
Cardiovascular	82	115	197	1%
Other	70	87	157	1%
Digestive	67	93	160	1%
TOTAL	7193	8613	15806	100%



In that fully 65% of all ambulatory care services in FY 1996 were provided within the Office/Outpatient Visit and Medicine Procedures, additional analysis was warranted in order to adequately describe the scope of care provided within these categories. Table 8, Breakdown of Leading CPT Codes for FY 1996, provides summary information for these identified categories of care. Established Visit codes account for 85% of the total 6133 Office/Outpatient Visits documented for FY 1996, while New Visits made up 11%. Within the category of Medicine Procedures, Audiology and Speech Pathology services rank first with 45% of the total 4140 procedures documented for the two county study area. Eye and Vision Procedures ranked a distant second with 722 procedures (17%) out of the total in Medicine. Table 8 summarizes the balance of the specific procedures detailed within Medicine.

As was the case for Ambulatory Care described above, Inpatient Care data was also collected for the years FY 1992 through FY 1996 for the population of existing patients residing in the two county study area. Table 9, Summary of Inpatient Discharges by MDC: FY 1992 - FY 1996, provides one indicator of the volume of inpatient care services delivered to this population over the past five years. This information is presented as numbers of discharges categorized by Major Diagnostic Category (MDC) and ranked in descending order by the volume of FY 1996 discharges in Weber County. This data indicates a moderate growth in the utilization of inpatient services in the period covered in Table 9. In terms of the combined Weber and Davis counties total inpatient discharges per year, a 15.7% increase in discharges occurred from FY 1992 to FY 1995, with discharges totaling 630 in FY 1992, 680 in FY 1993, 698 in FY 1994, and 729 discharges recorded in FY 1995. This total drops slightly to 692 in FY 1996. Because this data is limited to these five years, it precludes identifying a significant growth trend in the volume of inpatient discharges.

Table 8

DETAILED BREAKDOWN OF LEADING TWO CPT CODES FOR FY 1996: OFFICE/OUTPATIENT VISIT & MEDICINE

CPT CATEGORY	WEBER	DAVIS	TOTAL	PERCENT
OFFICE/OUTPATIENT VISIT				
Established Visit	2411	2823	5234	85%
New Visit	294	365	659	11%
Other	76	164	240	4%
TOTALS:	2781	3352	6133	100%
MEDICINE				
Audiology & Speech Path.	819	1035	1854	45%
Eye & Vision Procedures	325	397	722	17%
Immunizations	200	276	476	11%
Ear, Nose & Throat	176	223	399	10%
Cardiology Procedures	136	182	318	8%
Other	74	154	228	6%
Post Operative Follow Up	70	73	143	3%
TOTALS:	1800	2340	4140	100%

NOTES:

1 Quantities indicate number of patient encounters or procedures. This data does not correlate with the outpatient visit data for FY 1996.
2 Examples of "Other" Office Visits include emergency care, preventive counseling, and consults.
3 Examples of Cardiology Procedures include echo cardiograms, cardiovascular stress tests and ECGs.
4 Examples of "Other" Medicine Procedures include oncology and physical medicine procedures.

Table 9

SUMMARY OF INPATIENT DISCHARGES BY MAJOR DIAGNOSTIC CATEGORY: FY 1992 - FY 1996
MDC CATEGORIES SORTED DESCENDING BY NUMBER OF DISCHARGES IN WEBER COUNTY IN FY 1996

MDC	Number of Discharges									
	FY 1992		FY 1993		FY 1994		FY 1995		FY 1996	
	WEBER	DAVIS	WEBER	DAVIS	WEBER	DAVIS	WEBER	DAVIS	WEBER	DAVIS
Circulatory	39	55	58	63	66	49	68	68	67	71
Alcohol, Drugs	50	37	53	25	59	17	63	40	60	35
Mental	20	24	31	22	34	28	29	20	46	36
Respiratory	42	26	30	31	27	30	40	35	33	34
Muscle, Bone, Connective	35	18	54	38	39	18	20	25	26	27
Digestive	23	27	16	28	25	43	27	27	24	22
Nervous System	25	33	33	28	41	21	43	40	21	33
Kidney, Urinary	13	14	9	10	15	12	20	9	16	9
Eye	13	16	9	12	17	10	15	15	13	7
Endocrine, Metabolic	6	3	12	4	9	6	4	5	9	5
Health Visit	9	5	11	3	8	10	6	3	6	10
Liver, Pancreas	7	4	7	9	13	6	11	16	6	17
Infectious, Parasitic	3	2	7	3	4	6	5	4	5	7
HIV Infections	1	0	0	1	1	2	1	3	5	1
Male Reproductive	6	9	7	3	4	6	4	6	4	4
Ear, Nose, Throat	14	12	13	12	19	7	5	6	4	7
Blood and Related	3	3	2	3	3	1	3	1	2	3
Myeloproliferative	4	3	1	2	10	4	9	1	2	0
Injuries, Toxic	3	4	3	3	4	3	7	2	2	5
Skin, Subcutaneous, Breast	7	10	13	10	9	11	10	6	2	4
Female Reproductive	0	2	0	1	0	0	3	2	1	1
Burns	0	0	0	0	0	1	2	0	0	0
TOTAL	323	307	369	311	407	291	395	334	354	338

A detailed analysis was undertaken also for this FY 1996 MDC coded inpatient information for the purposes of determining the services with the highest utilization by our defined population. Table 10, Summary of Inpatient Discharges by MDC Code: FY 1996, presents a list of major diagnostic categories ranked in descending order and organized by county. The three major diagnostic categories with the highest rates of service utilization are: 1.) Circulatory diagnoses consisting of 20% of all MDCs; 2.) Alcohol and Drug diagnoses with 14% of the MDCs; and 3.) Mental diagnoses with 10%. The category totals and their respective percentages for FY 1996 are also summarized in Table 10. Additionally, an illustration defines graphically the relative distribution of these major diagnostic categories that address the total inpatient discharges for FY 1996. The Discussion section that follows provides further analysis of this informative data.

DISCUSSION

The Location Determination results will be discussed and interpreted first in this section, followed by a discussion and interpretation of the Needs Assessment component of this exploratory investigation.

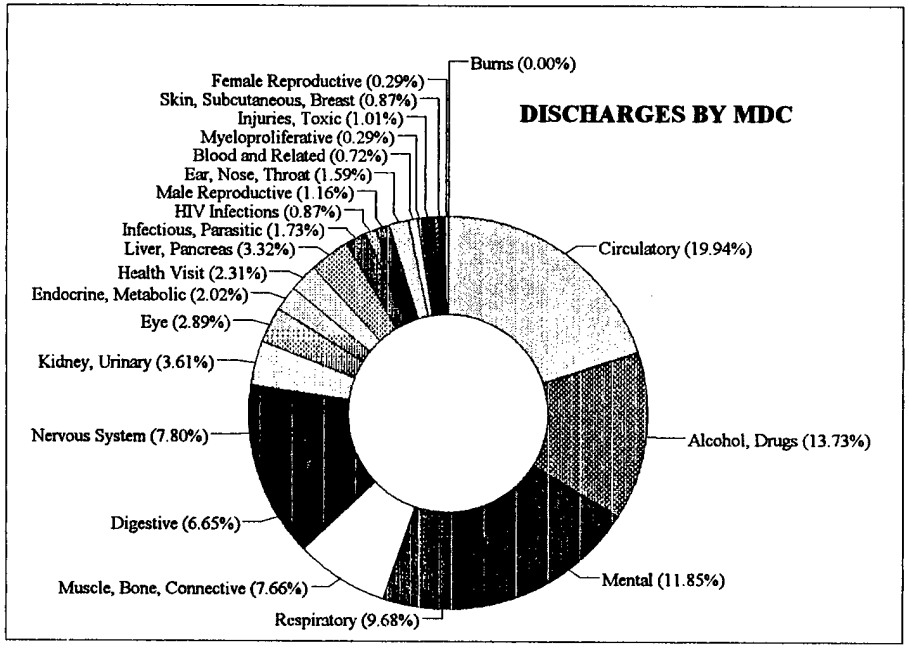
Location Determination:

Taken in their entirety, the counties of Weber and Davis have substantially similar total *patient* and total *veteran* populations (Table 1). The difference in total *patient* population between the two counties amounts to only 3% of the combined total patient population. The difference in the total *veteran* population falls to a mere 1% of the combined total veteran population of both counties. The geographic distribution of the patient and veteran populations is also very similar in the two counties. This is due in large part to the fact that the population center of the bi-county region is the Ogden metropolitan area, which falls nearly on the dividing

Table 10

SUMMARY OF INPATIENT DISCHARGES BY MDC CODE: FY 1996

MDC CATEGORY	FY 1996			
	WEBER	DAVIS	Total	Percent
Circulatory	67	71	138	20%
Alcohol, Drugs	60	35	95	14%
Mental	46	36	82	12%
Respiratory	33	34	67	10%
Muscle, Bone, Connective	26	27	53	8%
Digestive	24	22	46	7%
Nervous System	21	33	54	8%
Kidney, Urinary	16	9	25	4%
Eye	13	7	20	3%
Endocrine, Metabolic	9	5	14	2%
Health Visit	6	10	16	2%
Liver, Pancreas	6	17	23	3%
Infectious, Parasitic	5	7	12	2%
HIV Infections	5	1	6	1%
Male Reproductive	4	4	8	1%
Ear, Nose, Throat	4	7	11	2%
Blood and Related	2	3	5	1%
Myeloproliferative	2	0	2	0%
Injuries, Toxic	2	5	7	1%
Skin, Subcutaneous, Breast	2	4	6	1%
Female Reproductive	1	1	2	0%
Burns	0	0	0	0%
TOTAL	354	338	692	100%



line between the Weber and Davis counties. This creates areas of urban population densities that occur almost symmetrically in the two counties. This is clearly depicted in Figure 4. Also, both counties have smaller areas of patient and veteran population concentrations occurring in opposite corners of the counties. Figures 3 and 4 display these two outlying areas. The similarities in the veteran demographics of the two counties facilitate the analysis depicted in Table 1 through Table 4. The minor distinctions between the counties almost disappear in Table 3 and Table 4 when the patient and veteran populations are ranked by zip code.

The Location Determination analyses contained in Tables 1 through 4 and depicted on the maps contained in Figures 3 and 4 culminate simply and elegantly in Figure 5 and Table 5. The greatest concentrations of patients and veterans occur in the area surrounding Ogden. As previously indicated, this area is comprised of eleven zip codes, of which all, or portions of all, fall within five miles of the center of Ogden. The relative scope of the patients and veterans captured within this identified zone is summarized at the bottom of Table 5.

The results of these analyses clearly point to the center of Ogden as the optimal location within which to locate a VA Community Based Outpatient Clinic. By locating the primary care access point as close as possible to the center of this zone of patient and veteran population concentration, approximately 63% of all Weber and Davis county *existing patients* will have five miles or less to travel to access care. Approximately 55% of the *total veteran population* will have five miles or less to travel to access primary care.

A CBOC in or near the center of this identified zone will reduce travel distance to access care for a majority of patients in Weber and Davis counties from an average of forty-five (45) miles (to Salt Lake City) to an average of only five (5) miles. Veterans and patients living farther to the north of Ogden can also realize significant improvements in access to care with a CBOC

operating near the center of Ogden. While access will require traveling a distance greater than five miles for these individuals, the overall improvement for patients compared to the previous required distance, which often exceeded sixty (60) miles, will be very beneficial. For veterans and patients living to the south of Ogden, the benefits of reduced travel distance to a clinic in Ogden will also be important. However, this benefit of reduced distance will begin to decline farther to the south and become negligible for individuals residing at approximately the mid-point in distance between the Ogden clinic and the VA Medical Center in Salt Lake City. Close attention must be given to the geographical location of residence during the process of assigning veterans to primary care patient panels for both the Ogden CBOC and the Primary Care Clinics at the VAMC in order to avoid imposing unnecessary travel distances on our patients.

Needs Assessment:

As previously established, the Needs Assessment component of this GMP was developed through a utilization review based model employing data derived from the clinical process of providing care to the individual. This model is particularly appropriate to this planning effort in that the population programmed to initially receive care in this CBOC is comprised of existing patients living in Weber and Davis counties who have been receiving care at the VA Medical Center in Salt Lake City. All UR data was obtained from patients originating in these two counties who received care at the VAMC during the period FY 1992 through FY 1996.

In the future, it is anticipated that this CBOC will expand it operations to include the delivery of primary care to veterans who are not currently VAMC patients. For this reason, it is important to address in this analysis the relative market penetration held by the VAMC in the two-county planning area. Table 2 contains market penetration information for the study area. For the combined total area, the VAMC in FY 1996 held an average market penetration of 7.4%.

Separately, the penetration was 7.3% for Davis County and 8% for Weber County. As shown in Table 2, the range of percentages of market penetration in the study area ranges from a high of 13.1% in zip codes 84401 and 84402 (Ogden) to a low of 2.7% in zip code 84315 (Hooper). Within the identified zone of concentration of patient population shown in Figure 5, the average market penetration for all eleven included zip codes is slightly higher at 8.8%.

This market penetration discussion is intended to highlight the fact that overall, given the high population of veterans at 34,092 (1990 Census) in the study area and the FY 1996 patient population of only 2532 (7.4%), the Salt Lake City VA Medical Center delivery system has significant untapped potential in terms of growth of its patient base. This condition clearly supports the establishment of a CBOC in the metropolitan Ogden area. The limits on resources available to provide care to eligible veterans will restrict the total market penetration possible, however, it is reasonable to expect within the next five years to see our patient base grow to 7000 veterans for a 20% market penetration in the Weber and Davis county area. This projection is based upon an official VA estimate of approximately 7000 veterans with high priority eligibility categories currently living in the two county study area.

For a more focused discussion of the Needs Assessment component, it is important to reiterate that two categories of utilization review data were included in this analysis. First, inpatient care utilization was analyzed through the use of data describing raw numbers of inpatient discharges (by zip code for FY 1996 on Table 1) and numbers of inpatient discharges organized by major diagnostic category (by county and year on Table 9). The range of FY 1996 average inpatient discharges per 100 patients in each zip code extends from zero in zip code 84412 (Ogden), to a high of 67 discharges per 100 patients in zip code 84408 (Ogden). The overall averages for Weber and Davis counties in FY 1996 was 26 and 25 inpatient discharges per 100

patients respectively.

The second category of UR data employed in this analysis is ambulatory care utilization data. This is comprised of raw numbers of outpatient visits (by zip code for FY 1996 in Table 1) and numbers of ambulatory care procedures (or patient encounters) organized by CPT codes (by county and year on Table 6). The range of FY 1996 average outpatient visits per patient in each zip code extends from a low of 1 in zip code 84201 (Ogden) to a high of 10 average outpatient visits per patient in zip codes 84010 (Bountiful) and 84054 (North Salt Lake). The overall averages for Weber and Davis counties in FY 1996 was 6 and 7 outpatient visits per patient respectively.

In general terms, the zip codes containing the higher patient populations in Table 1 reflect more accurately the correct averages for both categories of utilization review data, while the lower populated zip codes represent outliers in the overall range of averages.

The inpatient care segment of the utilization review data is portrayed on Table 9. The major diagnostic categories are ranked descending for discharges from *Weber County* in *FY 1996.* Data from *FY 1996* was employed to correlate with the FY 1996 patient data used in the population distribution analysis. Being located farthest from the VAMC, *Weber County* data was selected for use in ranking because its population will undoubtedly constitute the core of patients accessing care at this CBOC.

Davis County veterans will use the CBOC in Ogden, however, a significant portion of these patients will continue to receive care at the VAMC due exclusively to the shorter travel distance. It is interesting to point out that over the years FY 1992 to FY 1996, Weber County patients show consistently higher inpatient utilization rates compared to Davis County patients for the same period. This higher rate is observed despite Weber County's slightly smaller patient

population (1226 vs 1306) and lower outpatient visits (8197 vs 9889) for FY 1996 when compared to Davis County. This fact could reflect a generally lower health status for veterans in Weber County. It is widely accepted that Davis County residents enjoy a higher socioeconomic status when compared to Weber County. Although speculative, this information clearly supports placing the CBOC in Ogden/Weber County.

As indicated above, Table 9 summarizes numbers of patient discharges organized by three main areas: 1.) year; 2.) county; and 3.) major diagnostic category (MDC). A 9.8% increase in total patient discharges over the period FY 1992 to FY 1996 is displayed on this table. Clearly evident from the data on Table 9 is the concentration of numbers of discharges in the top five MDC categories. Of these five MDC categories, two portray substantial growth across the period displayed; Circulatory and Mental, and three represent stable or low patterns of growth; Alcohol & Drugs, Respiratory, and Muscle, Bone & Connective category. All of the other seventeen (17) MDC categories also display stable or low patterns of growth across the period FY 1992 to FY 1996.

Sixty-four percent (64%) of all inpatient discharges in FY 1996 occurred within the top five MDC categories. Table 10 contains a summary of all inpatient discharges for FY 1996. The leading MDC category with 138 discharges is Circulatory, which includes (in order of FY 1996 prevalence) cardiac arrhythmia, heart failure & shock, angina pectoris, general circulatory diagnosis, major reconstructive vascular procedure, coronary by-pass, and peripheral vascular diagnosis. These are the seven leading procedures and diagnoses for the circulatory MDC for FY 1996. Alcohol and Drug Dependence ranks second in FY 1996 with 95 inpatient discharges. The Mental MDC ranks third and is comprised of the following leading diagnoses: depressive neuroses, organic disturbances & mental retardation, and psychoses. The top six diagnoses for

the fourth place Respiratory MDC are ranked as follows: chronic obstructive pulmonary diagnoses, simple pneumonia, respiratory infection, respiratory neoplasms, pulmonary embolism, and respiratory system diagnoses. The fifth leading MDC of Muscle, Bone & Connective Tissue includes the following top six procedures: major joint, back and neck, hip/femur, knee, hand, and medical back problems.

These patterns of inpatient utilization over the identified five year period is indicative largely of veterans who served during World War II. Due primarily to their age and certain unhealthy lifestyle choices, this population of older men receive inpatient health care services for problems with their heart and circulatory systems, their aged respiratory systems, and their worn-out hips, knees and other important joints. Additionally, this pattern can also be indicative of veterans who served during the Viet Nam conflict. This era can be represented in the high inpatient utilization rates for alcohol and drugs as well as mental diagnostic categories, although older WWII veterans are represented in these MDC as well. Analysis of this data for correlations with specific patient demographic groups is beyond the scope of this GMP.

This important inpatient utilization data translates into broad areas of specialized clinical experience that will be required of providers delivering care at this CBOC in Ogden. In addition to expertise in all aspects of primary care, these providers must have experience (or ideally cross-training) in cardiovascular medicine to care for major elements of the veteran population to be served by this CBOC. Additionally, experience in respiratory medicine will be important as well.

Mental heath care will be a very important component of services offered at this clinic. High quality care for depression and PTSD, for example, can be readily provided in this setting. Given the composition of the study area at-risk population, experienced VA practitioners will be extremely valuable on the health care delivery team.

A critical role for this CBOC to fulfill will include the provision of on-going follow-up care to our patients after hospitalizations. This involves close coordination with specialists at the VAMC on the part of our primary care providers. Other important components of service will include RN case management, patient and family education, and special programs to address risk factors such as smoking.

The ambulatory care segment of the utilization review data is portrayed on Table 6. This data represents both primary care categories and specialty care categories. Of course, under the CBOC operational model, patients requiring specialty care will be referred to appropriate specialty clinics at the VA Medical Center. The CPT categories in Table 6 are ranked descending for numbers of procedures or patient encounters in *Weber County* in *FY 1996.* The use of Weber County data for ranking relies on the same logic employed for the ranking of the inpatient utilization data previously examined. The same analysis model was also applied to this ambulatory care utilization data.

Table 6 portrays a strong growth pattern across the years FY 1992 to FY 1996. Between the years FY 1992 and FY 1996, the total annual procedures for the combined counties grew from 5810 to 15806. This 272% increase in five years represents a true shift in the delivery model from inpatient to outpatient care. The data for FY 1992 probably contains some coding errors resulting in undercounts for the office/outpatient category, however, the strength of the overall growth in the number of ambulatory procedures is undeniable. This information is also very supportive of implementing a CBOC primary care access point in Ogden.

The two CPT Categories that contain the largest number of procedures/encounters are Office/Outpatient and Medicine and together they represent fully 65% of all ambulatory care delivered in FY 1996 to patients residing in the study area. A detailed breakdown of these two

categories is presented in Table 8. Of the total 6133 Office/Outpatient encounters documented in FY 1996, 85% of these were established visits, 11% were new office visits, and the remaining 4% (240 encounters) were "other", which include emergency care, preventive counseling and consults. The breakdown of the Medicine encounters is displayed also on Table 8. Leading this CPT category in terms of numbers of encounters is audiology and speech pathology with 1845 which represent 45% of all Medicine encounters in FY 1996. The next group of encounters is eye and vision procedures, followed by immunizations and ENT procedures. Eight percent (8%) of all Medicine encounters is comprised of cardiology procedures with a total of 318. Finally, "other" procedures, including oncology and physical medicine encounters, and post-operative follow-up round out the totals with 6% and 3% of all Medicine procedures respectively.

As was the case in the analysis of the inpatient data, this ambulatory care data reflects patterns of utilization over the identified five year period that is also largely indicative of veterans who served in World War II. This population of older men receive outpatient health care services for problems associated with the aging process that effect their hearing, sight, heart and circulatory systems. These veterans also receive flu shots and other immunizations as well as post-op follow up visits in the ambulatory care setting. It is also important to highlight, as shown in Table 6, that significant utilization rates also occur in diagnostic Radiology (12%), Dental (9%), and Integumentary (6%). The aging process for these veterans effects teeth and also creates skin problems as reflected in the corresponding utilization data. The remaining CPT Categories include other important areas of ambulatory care to include diagnostic Lab, Musculoskeletal, Cardiovascular, Other, and Digestive systems.

The information contained in the utilization data addressing these categories of ambulatory care can easily transfer directly into requirements for the CBOC scope of services. While some of

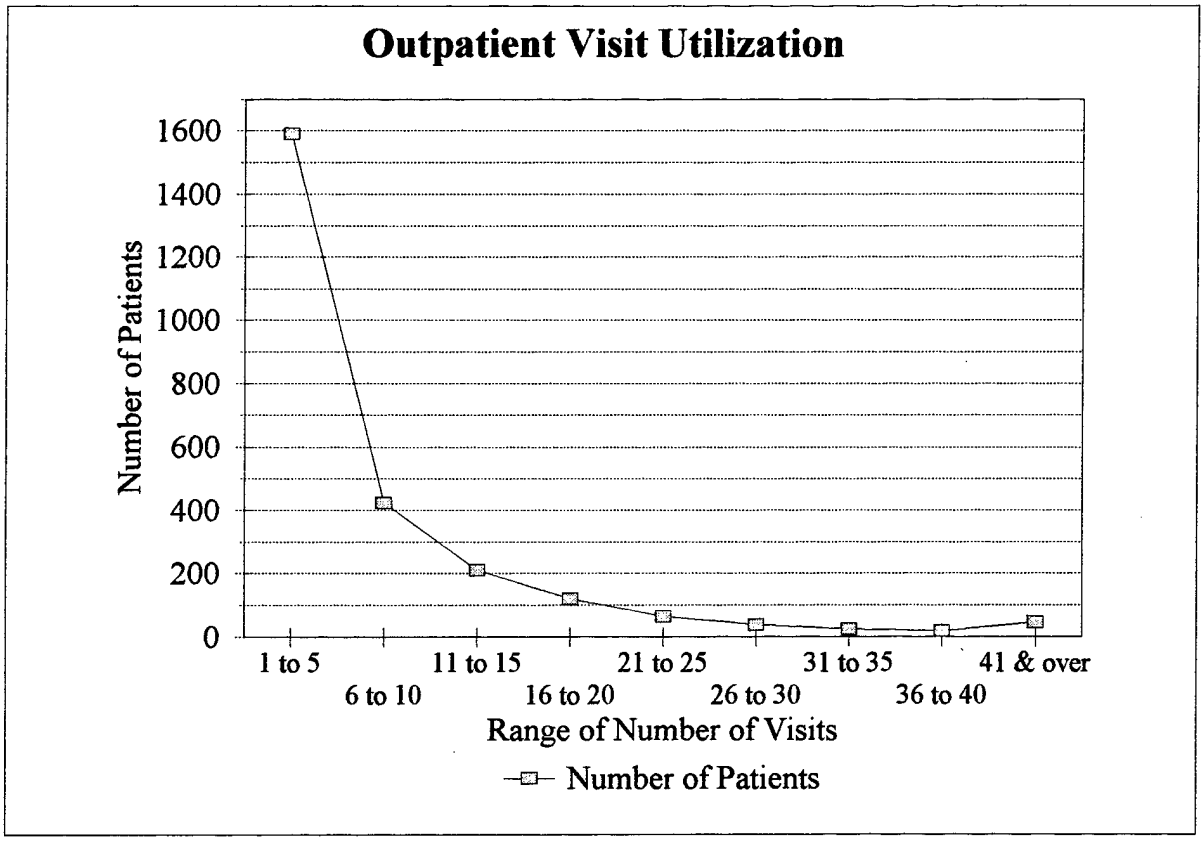
the care identified above is specialty care, such as audiology and ophthalmology, it is possible and desirable to establish recurring specialty clinics which are held at the CBOC. Specialty providers can travel to the CBOC and hold clinics when needed. This benefits patients and holds VA costs down. Most, if not all, of the health care need reflected in the office/outpatient visit utilization data will be met through the delivery of high quality primary care in the CBOC. In addition, all of the identified services and programs derived from the analysis of the inpatient care utilization data described previously will be integrated into one comprehensive scope of services at the CBOC. Although is it expected that a majority of patients initially receiving care at this CBOC will be older veterans of WWII, CBOC services and programs will also be designed to meet the needs of younger male as well as female veterans.

While on the subject of ambulatory care utilization data and rates, the information presented on Table 11, Ambulatory Care Utilization: Number of Outpatient Visits in FY 1996, depicts and interesting set of facts for existing patients in the study area in FY 1996. This table quantifies the number of patients from our study area with five or less outpatient visits in FY 1996. The table continues with additional ranges of visits, such as 6 to 10, 11 to 15, and so on to the point where all 2532 existing patients are addressed within a range of number of visits. It is surprising to note that 63% of this patient population (1590 veterans) limited their access to ambulatory care to five visits or less. Also shown on Table 11 is the fact that 80% of patients were provided care within 10 visits or less.

One conclusion that could be drawn is that this data reinforces the appropriateness of a primary care access point in Ogden for the purpose of meeting the majority of patient's health care needs. Although this data does not conclusively confirm that 80% of these patient's health care needs were met through 10 or fewer ambulatory care visits in FY 1996, it does strongly suggest that it may be an attainable goal for this CBOC program.

AMBULATORY CARE UTILIZATION: NUMBER OF OUTPATIENT VISITS IN FY 1996

Range of Number of Visits	Number of Patients			
Number of Visits	Weber	Davis	Total	Percent
1 to 5	806	784	1590	63%
6 to 10	192	231	423	17%
11 to 15	84	127	211	8%
16 to 20	54	66	120	5%
21 to 25	32	32	64	3%
26 to 30	22	16	38	2%
31 to 35	10	13	23	1%
36 to 40	9	8	17	1%
41 & over	17	29	46	2%
Total	1226	1306	2532	100%



CONCLUSIONS

The optimal location to provide primary care services to current and future patients residing in Weber and Davis counties is the center of the city of Ogden, Utah. This centralized location within the previously identified area of population concentration (Figure 5) serves to best meet the accessibility requirements of approximately 63% of current patients as well as approximately 55% of the total veteran population within the study area. The balance of the current patient population residing in the northern one-third of the study area (north of Ogden) will realize substantial improvement in their access to primary care upon implementation of this Community Based Outpatient Clinic in Ogden. The current patients residing in the southern one-third of the study area also will find improved access to care when comparative travel distances are reduced to reach the Ogden CBOC over previous travel distances to the Salt Lake City VA Medical Center. Additionally, the CBOC location in center-city Ogden will also provide optimal primary care access for the majority of the veteran population residing within the study area.

The important clinical components of primary care that are necessary to meet the health care needs of our unique patient population in Weber and Davis counties will be provided within the scope of services offered at the Ogden CBOC. The following is a summary of the important clinical components which are described more fully in the Needs Assessment section of the Discussion. This list is presented as elements of clinical care which are to be appropriately provided within the overall context of Primary Care delivery.

1. Comprehensive Primary Care
2. Cardiovascular Medicine
3. Respiratory Medicine
4. Mental Health Care

5. R.N. Case Management
6. Post-Operative Follow-Up Care
7. Specialty Care Referral
8. Patient and Family Education
9. Recurring Specialty Clinics, e.g., flu immunizations, audiology, etc.
10. Focused Programs, e.g., Smoking Cessation, etc.
11. Women's Health

It is acknowledged this summary list is the product of a service utilization model needs assessment, and while the effort was intended to be comprehensive, it is likely that additional clinical components will be identified after the CBOC is operational. Determining the scope of clinical services and programs offered is considered a dynamic process and high quality health care administration dictates that services continually be reviewed and updated to ensure they meet the changing needs of our patient population.

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